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U1S S2188 S2215

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(58) Field of Search

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(54) Portable telephone having an alarm function

(57) A portable telephone has a body 1 and a flipper 2 which is detachable from the body. The body has a transmission and receiving section 11, a speaker section 16 and transmission means 13 for generating a warning signal for announcing that the flipper is disconnected from the portable telephone, and a call signal when a call is received. The flipper is provided with a microphone section 21 and means for receiving a warning signal and a calling signal. With the portable telephone as described above, a user can recognize a received call and recognize the theft or misplacement of the telephone, as long as the user carries the flipper. An unauthorised person cannot use the portable telephone with an incorrect flipper, because the portable telephone body operates only when a specified flipper is connected.

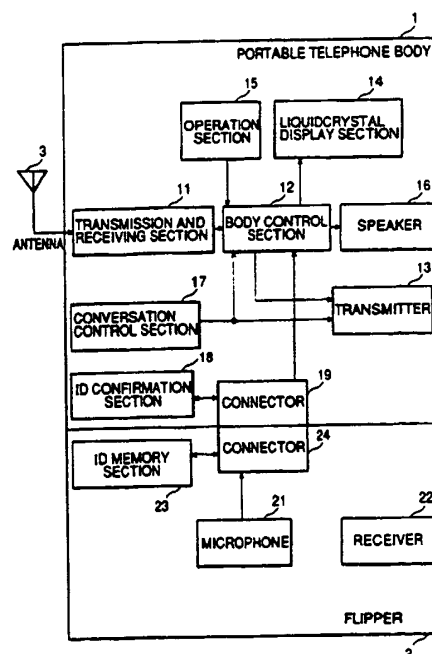


FIG.1

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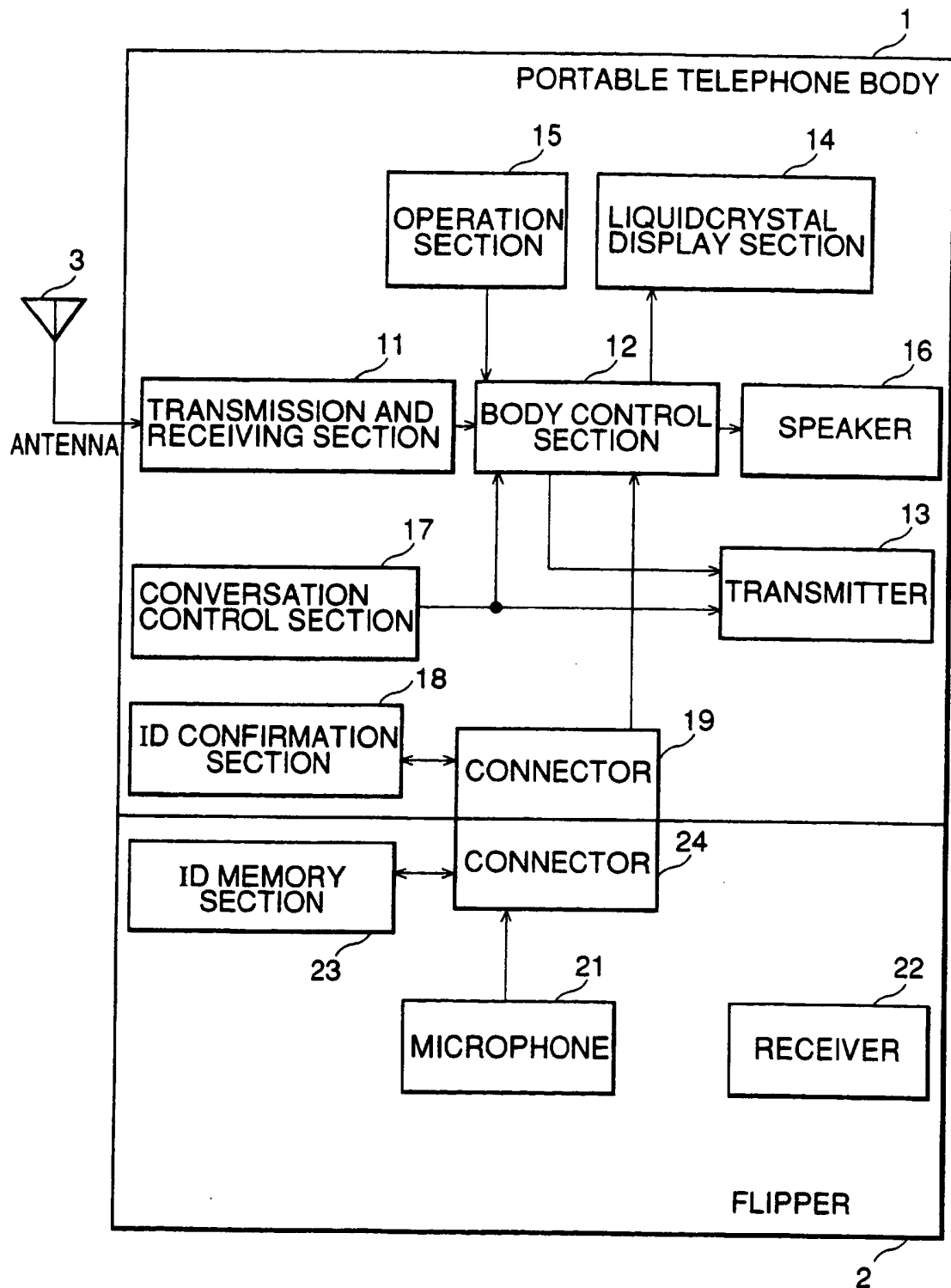


FIG.1

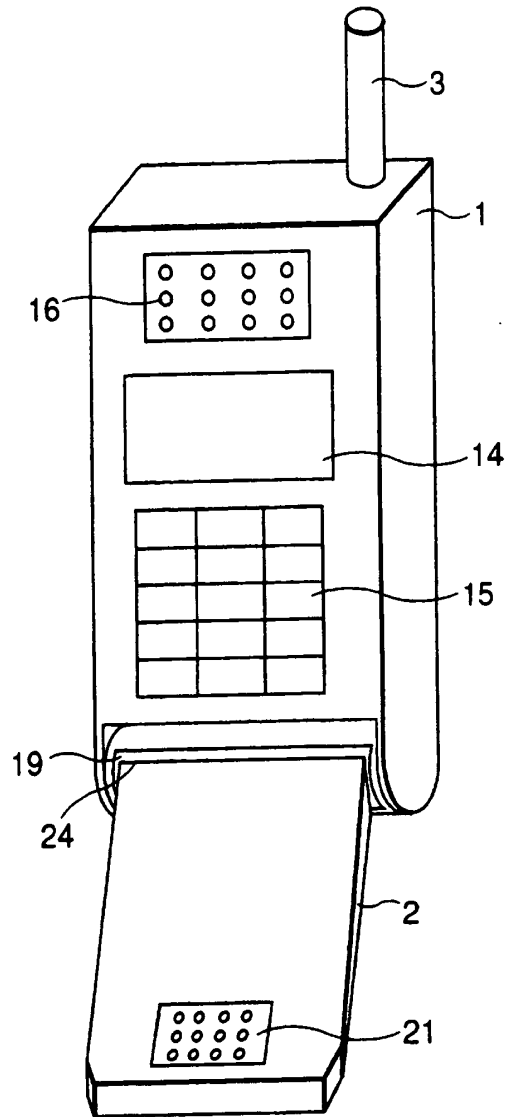


FIG.2

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FIG.3A

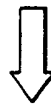
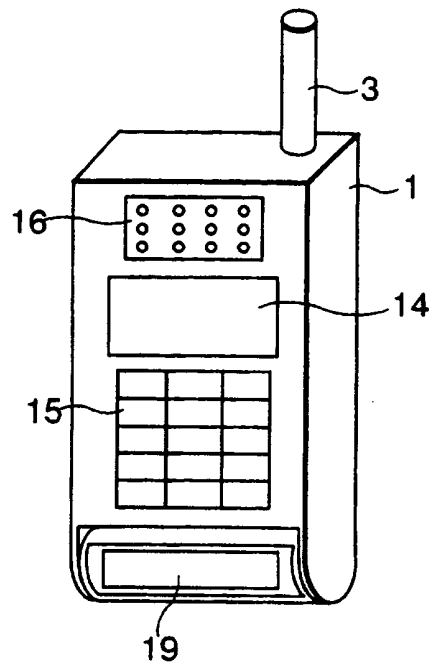
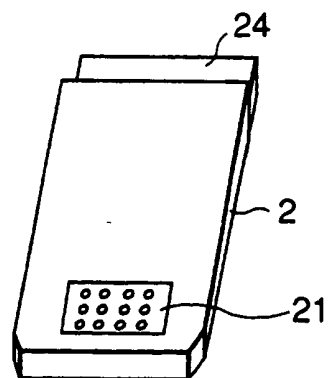


FIG.3B



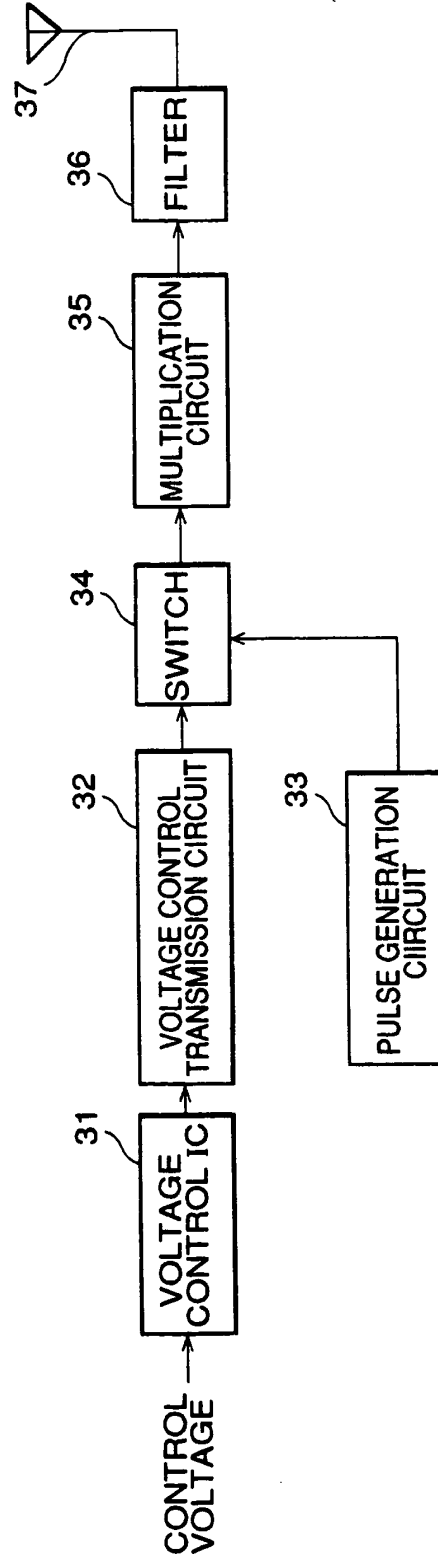


FIG.4

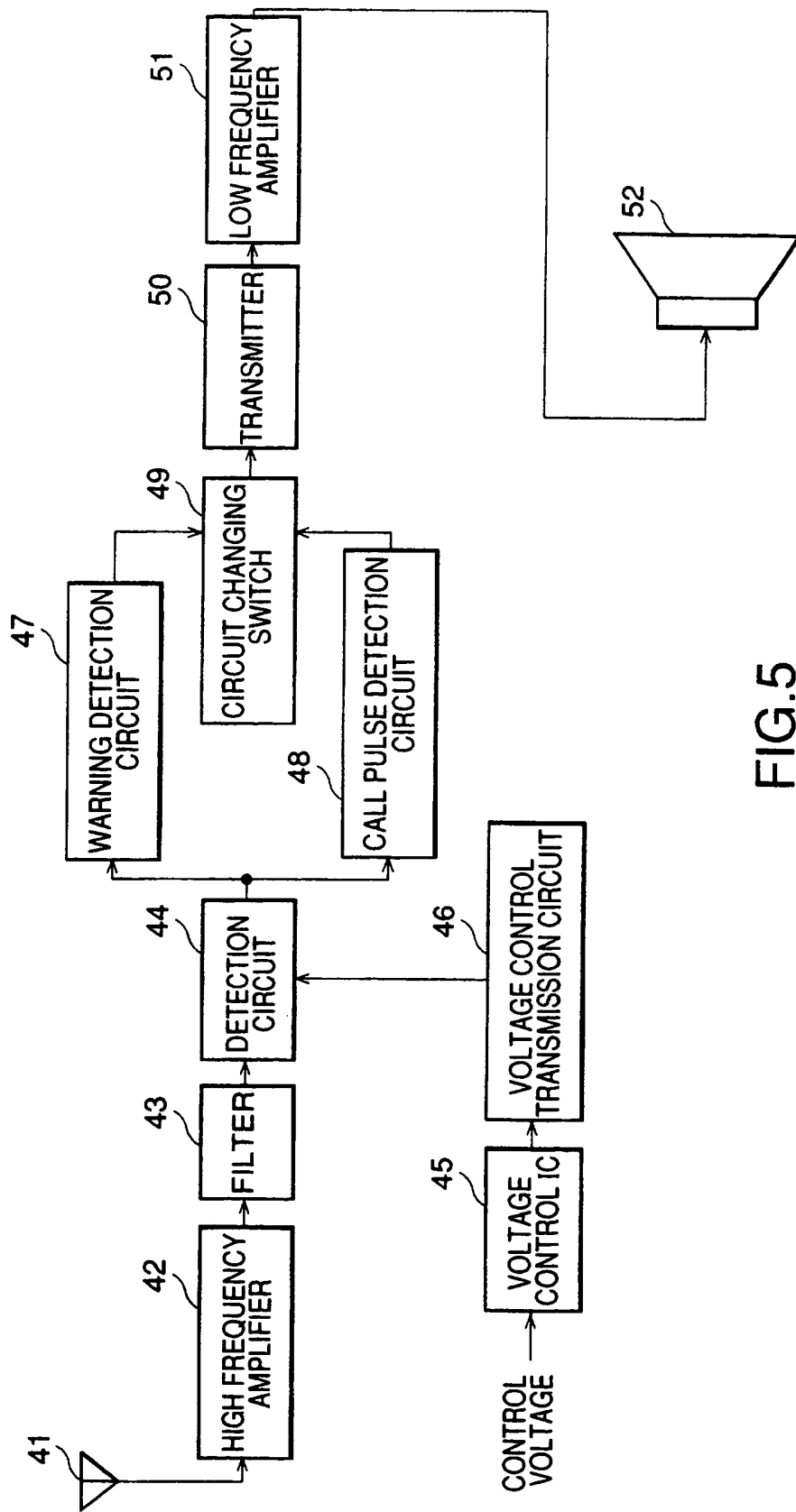


FIG.5

ELECTRONIC APPARATUS HAVING AN ALARM FUNCTION

This invention relates to an electronic apparatus having an alarm function for minimising the risk of the apparatus being misplaced, lost, or stolen. In a particular example to be described below in illustration
5 of the invention, the apparatus is a portable telephone.

A portable telephone to be described below by way of example in illustration of the invention has a flipper, in which there is a microphone, the flipper being connected rotatably to the body of the portable telephone
10 in which there are a speaker and a dialling input section. In use the portable telephone is carried, when the telephone is not in operation, with the flipper folded on to the body of the portable telephone. This arrangement makes it less likely that a call will be
15 instigated erroneously. When the user makes a call or receives a call, the flipper is opened in order to enable a conversation to take place.

Various measures have been proposed for making it less likely that such portable telephones will be
20 misplaced, lost, or stolen. For example, one proposed measure requires a user to input a personal identification number before a call can be made. It has also been known for a user to ask the telephone service company to disconnect the telephone line.

Furthermore, it has been proposed that a transmitter for transmitting a particular radio wave should be built into a portable telephone and that a particular radio wave from the transmitter be received by a receiver. For example, in the specification of Japanese utility Patent Laid-Open No. Hei 5-74038 there was proposed the combination of a key-shaped transmitter and a receiver having the function that an alarm is generated when the portable telephone is moved beyond the reach of a particular radio wave.

However, such methods have various disadvantages. Inputting a personal identification number has the disadvantage that, though the measure may make it more difficult for a stolen portable telephone to be used, unless the personal identification number is known, it is troublesome for the user to have to input a personal identification number every time that a call is made using the portable telephone. In the case in which the telephone service company is asked to disconnect the telephone line of a stolen portable telephone, there are the problems that the telephone may be used without authority until the user asks the telephone service company to disconnect the line and the telephone line is actually disconnected, and that, if the stolen or lost portable telephone is recovered, the user must contact the telephone service company to have the service reconnected. Further, in the case in which a special transmitter is built into a portable telephone, the user

is required to carry the special transmitter in addition to the portable telephone.

Features of electronic apparatus in the form of a portable telephone to be described below, by way of example in illustration of the invention, are that it is more capable of detecting misplacement, loss, or theft, and of making it difficult for an unauthorised person to use the portable telephone, in addition to informing the user promptly that the portable telephone has been stolen, than are the previously proposed arrangements.

In a particular electronic apparatus to be described below, by way of example in illustration of the invention, the apparatus has a body which includes a warning signal transmission section and a flipper having a warning signal receiving section and being detachable from the electronic apparatus body. The flipper is detachable from the body of a portable telephone in an example to be described. The portable telephone body is provided with a warning signal transmission section, a transmission section a receiving section and a speaker section and the flipper has a microphone section.

In one particular example to be described, the portable telephone body incorporates transmission means for transmitting at least one warning signal for announcing when the flipper is disconnected from the portable telephone body and for providing a call signal when a call is received. Further, the portable telephone body may incorporate judgement means for judging whether

the flipper that is connected is the flipper corresponding to the particular apparatus and means for inhibiting conversation via the telephone when the judgement means judges that the flipper that is connected
5 does not correspond to the particular apparatus.

The flipper has means for receiving both a warning signal and a call signal. The receiving means may include means for outputting an alarm when the warning signal is no longer detected, and means for outputting
10 call sound which is different from the alarm that is given when a call signal is received.

Such arrangements are helpful in minimising the risk that a portable telephone that has been stolen, for example, can be used by a stranger, and the user can be
15 made aware promptly of any theft of the portable telephone.

Arrangements illustrative of the invention will now be described, by way of example with reference to the accompanying drawings in which:

20 Fig. 1 is a functional block schematic diagram,

Fig. 2 is a perspective view of a combined portable telephone body and flipper,

Figs. 3A and 3B are perspective views of the body of the portable telephone and the flipper separated from one
25 another respectively,

Fig. 4 is a block schematic diagram for illustrating a particular example of a transmitter shown in Fig. 1, and

Fig. 5 is a block schematic diagram for use in illustrating a particular example of a receiver shown in Fig. 1.

First, an embodiment illustrative of the present invention will be described. Fig. 1 illustrates in a block schematic form a portable body and flipper shown in its physical form in Figs. 2, 3A and 3B. A portable telephone body 1 and a flipper 2 are connected together by means of connectors 19 and 24. The flipper 2 is detachable from the portable telephone body 1 by separating the connectors 19 and 24. The flipper 2 can be folded on to the side of the body 1 while the flipper 2 is coupled to the portable telephone body 1. A signal received by means of the antenna 3 is supplied to a control section 12 through a transmission and receiving section 11. A control section 15 includes a touch panel, a liquid crystal display section 14 for displaying a transmission and receiving signal, a speaker 16, a conversation control section 17, the connector 19, and a transmitter 13 which is connected to the control section 12. An ID confirmation section 18 is provided between the connector 19 and a conversation control section 17. The flipper is provided with a microphone 21, a receiver 22, an ID memory 23, and a connector 24.

As best shown in Figs. 2, 3A and 3B, the speaker 16, the liquid crystal display section 14 and the operation section 15 are provided on the principal surface of the portable telephone body 1. On the end of the portable

telephone body 1 there is an antenna 3. The flipper 2 having a card configuration is connected so as to be foldable and detachable via the connector 19. The microphone 21 is provided in the flipper 2.

5 Should the flipper 2 be connected to the portable telephone body 1 through the connectors 19 and 24 when a calling signal is received through the antenna 3 and the transmission and receiving section 11, the control section 12 outputs a signal to the speaker 16 for
10 generating a received call sound which announces the receipt of the call. When a user operates the operation section 15 of the portable telephone body 1 to bring it to the off-hook condition, speech signals received via the antenna 3 and the transmission and receiving section
15 11, are outputted from the speaker 16, and speech signals inputted from the microphone 21 of the flipper 2 are transmitted through the receiving and transmission section 11 and the antenna 3 under the control of the control section 12.

20 A power source for the portable telephone body 1 cannot become operational unless the flipper 2 is connected to the portable telephone body 1. Should the flipper 2 become disconnected from the portable telephone body 1 after the power source has become operational,
25 when the portable telephone body 1 receives a calling signal, the control section 12 will transmit a signal to the speaker 16 for generating a call sound to announce the receipt of a call and will also transmit a signal to

the transmitter 13 for generating a UHF band weak radio wave as a call signal. Upon the receipt of the calling signal from the transmitter 13, the receiver 22 of the flipper 2 operates to output a call sound from the speaker (not shown in the drawing) of the receiver 22. Accordingly, even if the portable telephone body 1 is placed in a bag, a calling signal is received audibly as long as the flipper 2 is near at hand.

The portable telephone body 1 always sends a warning signal from the transmitter 13 to the flipper 2 by way of a UHF band weak radio wave, as long as power is supplied from the power source. If the flipper 2 is moved far beyond the limit for the receipt of the UHF band weak radio wave emitted from the transmitter 13, the speaker (not shown in the drawing) of the receiver 22 outputs an alarm. Therefore, a user can become aware promptly of a theft or of the misplacing of the portable telephone body 1 when the portable telephone is stolen or misplaced as long as the user keeps the flipper 2.

When the power source of the portable telephone body 1 to which the flipper 2 is connected is turned on, or when the flipper 2 is connected to the portable telephone body 1, the power source of which is turned on, the ID confirmation section 18 of the portable telephone body 1 reads the ID previously stored in the ID memory 23 of the flipper 2 through the connectors 19 and 24, and compares the ID with a previously pre-determined ID. If the ID read from the ID memory 23 coincides with the pre-

determined ID, the ID confirmation section 18 transmits data indicating "ready for conversation" to the control section 12 through the conversation control section 17. Upon the receipt of the data of "ready for conversation" signal from the conversation control section 17, the control section 12 enables conversation to take place when calling in or calling out. If the ID read from the ID memory 23 does not coincide with the pre-determined ID, the ID confirmation section 18 transmits data indicating "NG for conversation" to the control section 12 of the body 1 through the conversation control section 17. Should the flipper 2 not be connected to the portable telephone body 1, the power source of which is turned on, and therefore an ID cannot be read from the ID memory 23, the data indicating "NG for conversation" can be transmitted to the control section 12 of the body 1 through the conversation control section 17. Upon the receipt of the data indicating "NG for conversation" from the conversation control section 17, the control section 12 enables it to be used only for calling in and locks or disables the dialling operation of the operation section 15 to disable the possibility of calling out. Should the ID of the flipper 2 connected to the portable telephone body 1 not correspond to the correct ID for the apparatus, the control section 12 will not allow a speech signal to be input from the microphone 21 of the flipper 2 for transmission through the transmission and receiving section 11 and the antenna 3. Accordingly, conversation

with the caller will be impossible. Further, in the case that the flipper is disconnected from the portable telephone body 1, conversation with a caller is impossible because the microphone 21 is separated. By
5 disconnecting the flipper 2, the portable telephone can be used for calling in, but it cannot be used for calling out without the conversation control section 17, the ID confirmation section 18 in the portable telephone body 1, and the ID memory 23 in the flipper 2.

10 In the transmitter 13 of the portable telephone body 1, a voltage control circuit IC 31 is connected to a voltage control transmission circuit 32, and the voltage control transmission circuit 32 and a pulse generation circuit 33 are connected to a switch 34, as shown in Fig.
15 4. Further, a multiplication circuit 35, a filter 36, and a switch 34 are connected in series to the switch 34. When the power source is operational in the portable telephone body 1 to which the flipper 2 is connected, the portable telephone body 1 becomes ready for being called
20 from a base station (not shown in the drawing), that is, the portable telephone body 1 is brought into the waiting condition for the receipt of a call. The portable telephone body 1 searches for a channel (free channel) which is to be used for transmission from the base
25 station, but which is free. If the portable telephone body 1 finds a free channel, the portable telephone body 1 is brought into the waiting condition in the channel. The waiting frequency is referred to as waiting channel.

In the waiting condition for a call, the voltage control circuit IC 31 generates a voltage corresponding to the waiting channel, and the control voltage remains fixed, until the power source of the portable telephone body 1
5 is turned off. The voltage control circuit IC 31 always outputs a control voltage corresponding to the waiting channel to the voltage control transmission circuit 32, and the voltage control transmission circuit 32 transmits a warning signal. Further, the control voltage generated
10 by the voltage control circuit IC 31 determines the frequency of the UHF band weak radio wave emitted from the transmitter 13. In other words, during a waiting condition, the warning signal is transmitted to the receiver 22 of the flipper 2 as a UHF weak radio wave via
15 the switch 34, the multiplication circuit 35, the filter 36, and the antenna 37.

On the other hand, if the portable telephone body 1 receives a calling signal through the antenna 3 and the transmission and receiving section 11, while the flipper
20 2 is disconnected from the portable telephone body 1, the control section 12 transmits the calling signal to the transmitter 13. Upon the input of the calling signal to the transmitter 13, the pulse generation circuit 33 operates the switch 34. The pulse signal generated in
25 the pulse generation circuit 33 is transmitted to the receiver 22 through the switch 34, the multiplication circuit 35, the filter 36, and the antenna 37 by way of the UHF band weak radio wave.

As shown in Fig. 5, the signal is transmitted to a detection circuit 44 via an antenna 41, a high frequency amplifier 42, and a filter 43. The detection circuit 44 is connected to a voltage control transmission circuit 46 and the voltage control transmission circuit 46 is connected to a voltage control circuit IC 45 which performs a similar control to the voltage control circuit IC 31 of the transmitter 13 shown in Fig. 4. When the power source in the portable telephone body 1 is in operation, the flipper 2 is connected to the portable telephone body 1, and the portable telephone body 1 selects a free channel and is brought into the waiting condition in the channel. Accordingly, the voltage control circuit IC 31 generates a control voltage corresponding to that of the waiting channel in the receiver 22 in response to the operation of the voltage control circuit IC 31 of the transmitter 13. As a result, the voltage control transmission circuit 46 transmits a signal at the same frequency as that of the voltage control transmission circuit 32 of the transmitter 13 shown in Fig. 4. The detection circuit 44 is connected to a warning detection circuit 47 and a call pulse detection circuit 48. Further, the output signals from these two detection circuits are switched by means of a circuit changing switch 49, and the signal is output from the speaker 52 through a transmitter 50 and a low frequency amplifier 51.

The warning detection circuit 47 detects whether or

not a UHF band weak radio wave supplied by the detection circuit 44 is a warning signal. When the condition changes such that the warning detection circuit 47, detecting a UHF band weak radio wave of the warning signal, is no longer detecting the UHF band weak radio wave, the warning detection circuit operates the switch 49 to output a warning signal. The warning signal is output from the speaker 52 as an alarm. The call pulse detection circuit 48 detects whether the UHF band weak radio wave supplied from the detection circuit 44 is a call pulse or not. Upon detecting a call pulse, the call pulse detection circuit 48 operates the switch 49 and outputs a call signal. The call signal is output from the speaker 52 as a calling sound which is different from the above-mentioned alarm.

As described above, even though a user is distant from the portable telephone body 1, the user can become aware of the receipt of a call as long as the flipper 2 is near to the user. The portable telephone body 1 always transmits a UHF band weak radio wave to the flipper 2 as long as the power source is turned on, and if the portable telephone body 1 is beyond the detection limit of the UHF weak radio wave, the flipper 2 generates an alarm. Therefore, a user is able to recognize promptly the theft or misplacing of the telephone as long as the flipper 2 is near the user when the portable telephone body 1 is stolen or misplaced. The portable telephone body 1 is operated only when the flipper 2 is

connected or a flipper corresponding to this apparatus is connected. Accordingly, strangers, other than the authorised user cannot use the portable telephone body 1 as long as the user keeps the flipper 2, even though the portable telephone body 1 is stolen or misplaced.

The detectable limit of the UHF band weak radio wave can be prescribed in a range, for example of from 5 m. to 10 m. The configuration of the flipper can be, for example, 4 to 6 cm in height, 7 to 10 cm in width, and 0.5 cm thick.

While particular embodiments, illustrative of the invention have been described, by way of example, it will be understood that variations and modifications thereof, as well as other embodiments, may be made within the scope of the appended claims.

CLAIMS

1. An electronic apparatus including an electronic apparatus body having a warning signal transmission section, and a flipper having a warning signal receiving section and being detachable from the electronic apparatus body.

2. A portable telephone including a portable telephone body having a warning signal transmission section, a transmission section, a receiving section, and a speaker section, and a flipper having a microphone section and being detachable from the portable telephone body.

3. A portable telephone as claimed in claim 2, wherein the warning signal transmission section includes means for transmitting at least one of a warning signal for announcing that the flipper is disconnected from the portable telephone body, and a calling signal when a call is received.

4. A portable telephone as claimed in claim 2, wherein the portable telephone has means for judging whether or not the connected flipper is the flipper corresponding to the telephone, and means for disabling any external conversation when the judgement means judges that the flipper does not correspond to the telephone.

5. A portable telephone as claimed in claim 2,
wherein at least one of the warning signal and the call-
in signal is a signal having a prescribed frequency based
on the line frequency which is used by the portable
5 telephone body.

6. A portable telephone as claimed in claim 2,
wherein the transmission means has a switch for switching
between the warning signal and the calling signal.
10

7. A portable telephone as claimed in claim 2,
wherein the transmission means transmits the warning
signal and the calling signal by means of a UHF band
radio wave.

15 8. A portable telephone as claimed in claim 2,
wherein the flipper has means for receiving the warning
signal and the calling signal.

20 9. A portable telephone as claimed in claim 8,
wherein the receiving means has means for outputting an
alarm when the detection of the warning signal is
discontinued and means for outputting a calling sound
which is different from the alarm when the calling signal
25 is received.

10. An electrical apparatus as claimed in claim 1 substantially as described herein with reference to the accompanying drawings.



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Claims searched: 1

Examiner: David Summerhayes
Date of search: 7 August 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.O): G4N (NAFA, NAFB, NHVX, NPL); H4J (JK)

Int CI (Ed.6): G08B 13/14, 21/00; H04M 1/02

Other: ONLINE: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2284498 A (MULTITONE)	1
X	GB 1215009 (DAICH)	1
A	EP 0581416 A1 (YANG)	
A	WO 96/21988 A1 (ERICSSON)	
X	WO 95/02874 A1 (BUONAVOGLIA)	1
X	WO 93/19437 A1 (CHAPELSKY)	1
A	US 5303291 (TAKAGI)	
X	US 4267547 (SUGIYAMA)	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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